

Management concept

Company purpose

We contribute to the improvement of society through production, sales of good products and prosperity of business.

Company motto

We pride ourselves as a pioneer in the interior design and furnishing industry and persist in the spirit of cooperation, sincerity and resolution.

We put our management concept into practice on a daily basis and maintain high ethical standards in all aspects of our business operations, so as to continuously enhance Suminoe Textile's profile as a leader in its industry.

We have drawn up the Code of Conduct set out below to serve as the core principles of our compliance-based management, for observance by all officers and employees of the Company as individuals, and by the Company itself as a collective body.

Code of Conduct

- 1 We comply with all laws and social norms and conduct corporate activities in an impartial and ethically sound manner.
- 2 We contribute to the advancement of the community through the production and sale of good quality products.
- 3 We treat all employees of the Company fairly, act with due respect for their individual personalities, and place high importance on their health and safety.
- 4 We place high priority on maintaining good relationships with all our stakeholders.
- 5 We make proactive contributions to the community, as expected of a good corporate citizen.
- 6 We take very seriously the impact of our business activities on the global environment, and contribute to environmental preservation initiatives.

Environmental fundamental philosophy

Recently deterioration of global environment has rapidly progressing. It is a mission in common among human beings who live on earth to make efforts to preserve and improve global environment and hand the beautiful earth to our descendants. Suminoe Textile Co., Ltd. well recognized this fact, will make a comfortable and rich society with a cooperation of all the employees positively tackling with environmental preservation activity.

Guideline on activity

In carrying out environmental conservation activities

- 1 We will positively promote energy-saving, resource-saving, recycling with a consideration not to contaminate environment in all of our business activities.
- 2 We will try to preserve environment through products' life cycle from production, sales to disposal by developing environment-friendly technology and products.
 1. Development of technology for energy-saving and resource-saving
 2. Development of recycling technology and recycling system
 3. Development of products and technology to replace materials which would put less load on environment and have more safety.
 4. Development of product which could improve environment and contribute to health and comfort.
- 3 We will try to live together with community through close communication and all employees will start action from whatever one can do.
- 4 We will try to maintain internal system to promote environmental protection and enhance environmental consciousness of all employees.

Resources for the future

Can we create resources?

Suminoe created a new carpet tile by renewing no-longer-useful waste carpet tiles as resources utilizing its technical capabilities.

To carry over resources to the future through repeated recycling, Suminoe created a recycled carpet tiles, ECOS.

Establishing a standard in the next generation—that's Suminoe's new challenge.



Message from the President

“Resources for the future” to establish a sustainable society

Ichizo Yoshikawa
President
Suminoe Textile Co., Ltd.

Ten months have passed since the Great East Japan Earthquake, which caused tremendous damage. Now, we are on the way of recovery, struggling to focus on the subsequent ongoing nuclear crisis. The damage caused by the tsunami was extremely devastating. The power of nature easily overwhelmed our communities, destroying a nuclear power plant that we had been told was safe, and bringing about unprecedented problems of radioactive contamination.

Although worldwide approaches to reduce CO₂ emissions have progressed step by step since the Cancun Agreement signed in 2010 and the following COP17 held at the end of 2011, the gap between developed and developing countries remains wide amid even greater necessity of economic negotiation.

In these circumstances, global warming has been steadily progressing, requiring us to develop a framework to reduce CO₂ emissions beyond individual interests, and to proceed without delay.

In July 2011, Suminoe Textile Co., Ltd. launched recycled carpet tiles called “ECOS.” “ECOS” has the

highest quality in the world with a maximum recycling rate of 77%, using post-consumer materials collected from the market, and a maximum CO₂ emissions reduction rate of 43% (compared with traditional products of our company). Our former products in the market are being sequentially replaced with “ECOS” to reduce carpet tile waste, which was disposed of in landfills before, and to recycle our limited resources. Following the key phrase “Resources for the future,” we intend to play a leading role in helping establish a sustainable society as a pioneer interior maker.

In “Eco Challenge 2015,” our tertiary medium-term action plan commenced in June 2011, the range of targeted consolidated subsidiary companies was greatly expanded, and all of our group companies are proactively implementing the action plan to reach the goal. We therefore greatly appreciate your frank opinions and guidance.

January 2012

Environmental-friendly technology

Efforts for developing technologies

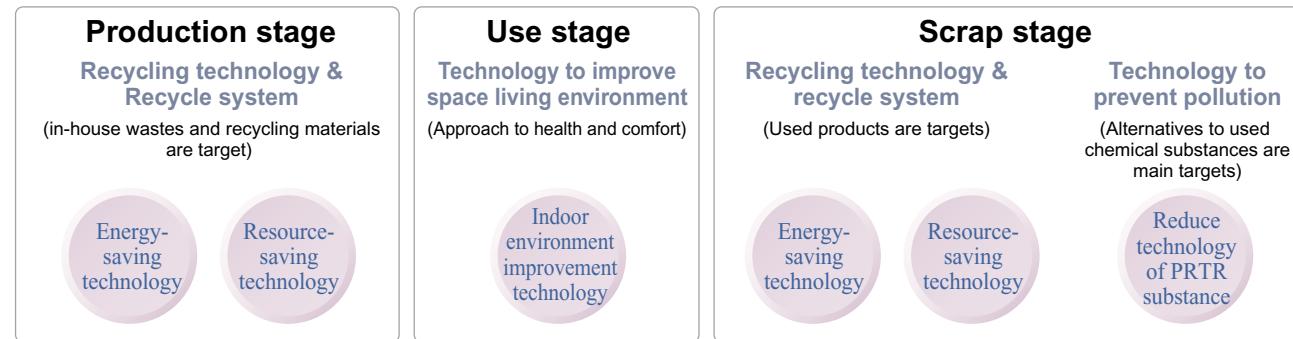
We always try to improve technologies based on the training of human resources so that we can reduce a load on environment throughout the life cycle from the production, use to scrap of products, and contribute to forming the sustainable society by harmonizing with nature.

While the development of technology to prevent public pollution or reduce a load on environment at the production stage was the main target so far, we are now tackling with the development of technologies not only to reduce a load on overall environment such as production, use and scrap stages, but also improve the environment of living space and offer products which could bring safety, security, health and comfort to people.

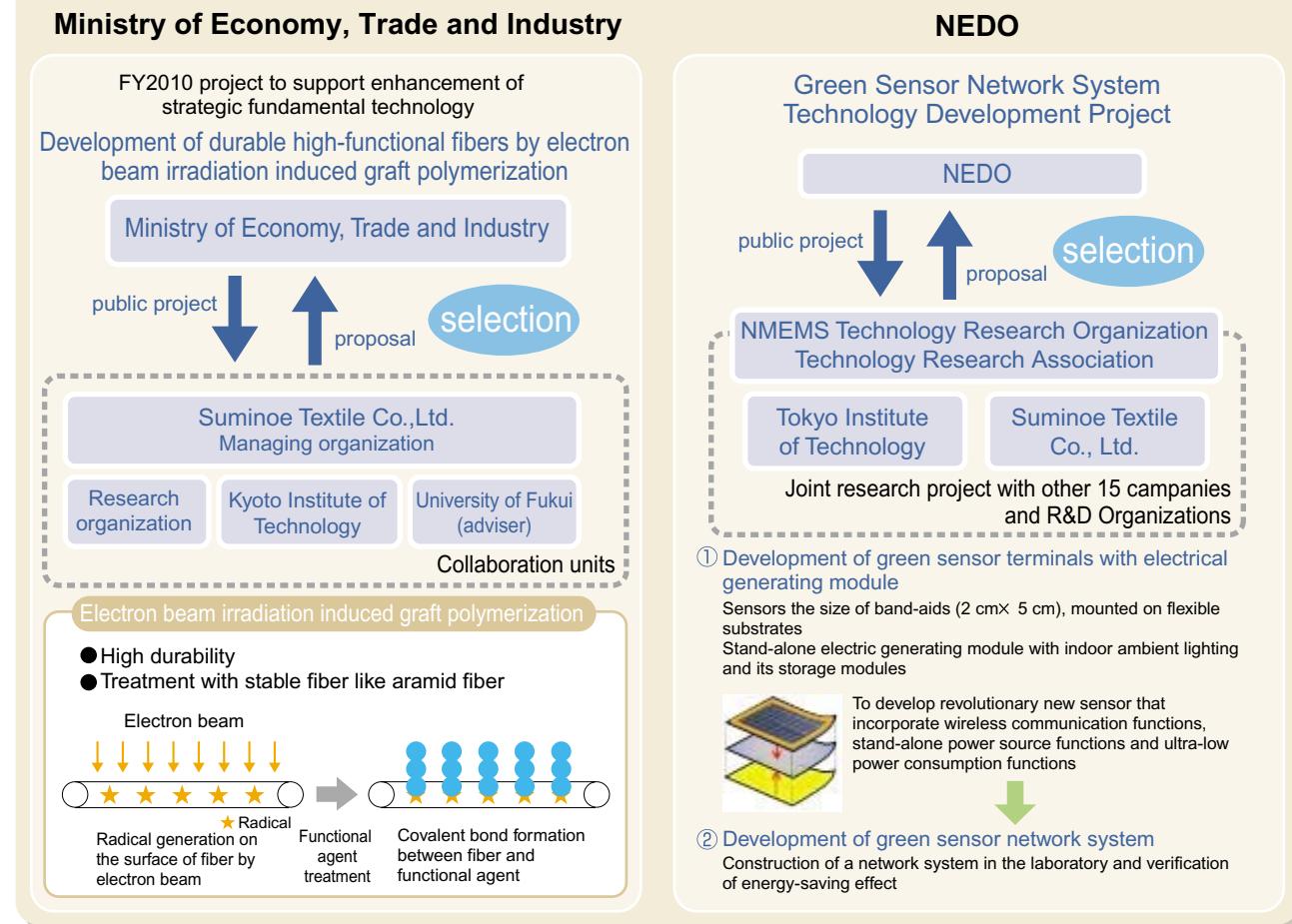
In this way our company is contributing to the society through "Environmental power" which is one of strong points of the company to develop products with low environmental impacts and low carbon-dioxide emissions for the achievement of the low carbon society.

Furthermore, our company has been participating in FY2010 Project to support enhancement of strategic fundamental technology of Ministry of Economy, Trade and Industry (METI) and also participating in FY2011 Project "Green Sensor Network with Low-Cost, Layout-and Maintenance-Free MEMS Sensors" of New Energy and Industrial Technology Development Organization (NEDO).

● Environmental technologies which Suminoe Group is approaching



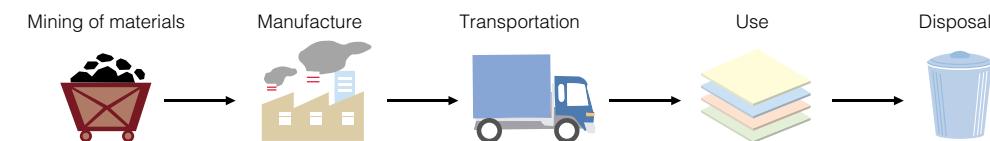
Collaboration of academia, industry and government for product development



Environmental consciousness of products valued through LCA

LCA is ...

LCA is known as "cradle-to-grave analysis". It is a comprehensive, quantitative assessment on the environmental effect of entire life cycle of the product from its gathering of materials, manufacture, transportation, use, to disposal.



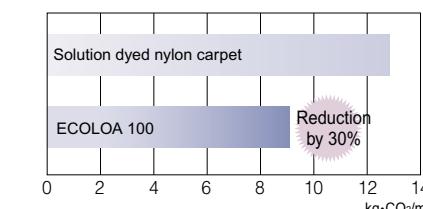
LCA evaluation of ECOLOA 100 and ECOS SG-500

ECOLOA 100

ECOLOA 100 reduces 30% CO₂ emission

ECOLOA 100 is the industry's first rolled carpet product which has acquired the Japanese Eco Mark and has reduced CO₂ emission by 30% than solution dyed nylon carpet. It makes use of Sumitron®, polyester yarn that contains 60% or more reclaimed materials from PET bottles.

● Comparison of CO₂ emission/m² through LCA.

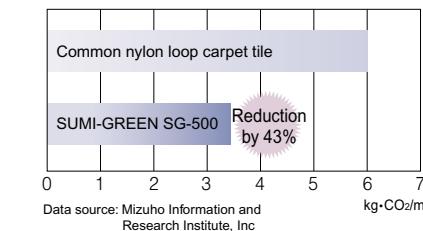


ECOS SG-500

Sustainable recycled carpet tile ECOS SG-500 has reduced 43% CO₂ emission.

ECOS SG-500 series are epoch-making carpet tiles containing recycled material both in the surface pile Sumitron® and recycles PVC in the backing, and certified products that meet the criteria of "Eco-Mark" by containing 74% of post-consumer material.

● Comparison of CO₂ emission/m² through LCA.



We have started LCA evaluation in Suminoe Textile Group.

We are now laying the groundwork for evaluating LCA for ourselves with the support of Mizuho Information & Research Institute, Inc. in 2011 fiscal year.

We have calculated LCA values of the following 4 products.

- Seat cushion material for railway transportation
- Car seat fabrics
- Carpet for cars
- Curtain

Bio Master

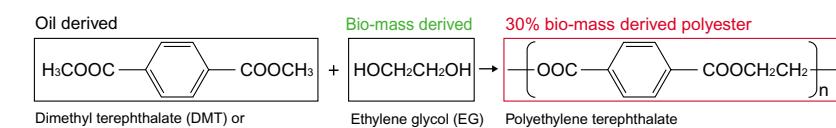
Car seat fabrics using bio-mass derived fiber.

Among concerns about the depletion of oil resources, many car seat fabrics using bio-mass fibers have been proposed. But no bio-mass derived fiber could have been replaced easily with oil derived PET fibers. Suminoe Teijin Techno Co.,Ltd. has developed "Bio-Master", the seat surface material which is using the sugar cane derived fiber which can be replaced immediately with oil derived PET fiber without any concern in the physical properties.

Features

- It has equal potential (yarn structure, performances) as oil derived PET fabrics, and can create design and texture as wanted.
- It excels to other bio-mass seat fabrics in productivity and cost performance.
- It can contribute to reducing CO₂ emission and load on environment.

● 30% bio-mass derived polyester



Bio-mass derived EG
→ 30% bio-mass derived PET

- Production process of Bio Master is same as that of oil derived PET and shows no difference in performances.
- Bio Master can be verified by radiocarbon dating.
- It can acquire "Biomass PlaMark" of Japan BioPlastics Association and "Biomass Mark" of Japan Organics Recycling Association.



● Comparison of performances of bio materials

	Oil derived PET	Bio Master	Bio PTT	PLLA
Melting point	255°C	255°C	230°C	170°C
Degree of bio-mass	0%	31%	36%	100%
Concerns	—	—	Strength decline	Heat & light resistance

Environmental-friendly technology

Production stage – Scrap stage

ECOS Recycled Carpet Tiles

Resources for the future

Suminoe has built a system which reduces wastes and circulates resources as an unprecedented level.

In response to the raising awareness of environmental issues, such as exhaustion of fossil fuels including petroleum, ever-increasing industrial wastes, and global warming caused greenhouse gases, what can Suminoe do as a pioneer in the industry?

Answering to this question, Suminoe constructed the "ECOS Recycle System" which reduces wastes and circulates resources at an unprecedented level through the whole life of carpet tiles.

Expanding the use of recycled carpet tiles at the same cost performance level as virgin tiles in the aim of realizing a "low-carbon society" and a "recycling-oriented society"—that's a challenge of the first company in Japan that started production and selling of carpet tiles.

Achieved the world's top level recycled material ratio

The ratio of recycled materials in most recycled carpet tiles in the market ranges from about 25 percent to a little over 40 percent. ECOS has achieved the recycled material ratio of up to 77 percent*, far superior to existing ones.

* In the case of SG-300 and SG-400.

Controlling safety with selected raw materials for recycling

There are not a few recycled materials whose origin is unknown. ECOS only uses waste carpet tiles as the materials recycled for the backing material to secure safety by controlling the origin of materials in a visible manner.

Reducing substantial amount of CO₂ emissions compared with existing products

The "ECOS SG" series uses Suminoe's original polyester material SUMITRON® made from recycled PET bottles in the surface pile material. The series has reduced a higher amount of CO₂ emissions than Suminoe's existing products by 40 percent or more in the LCA assessment.

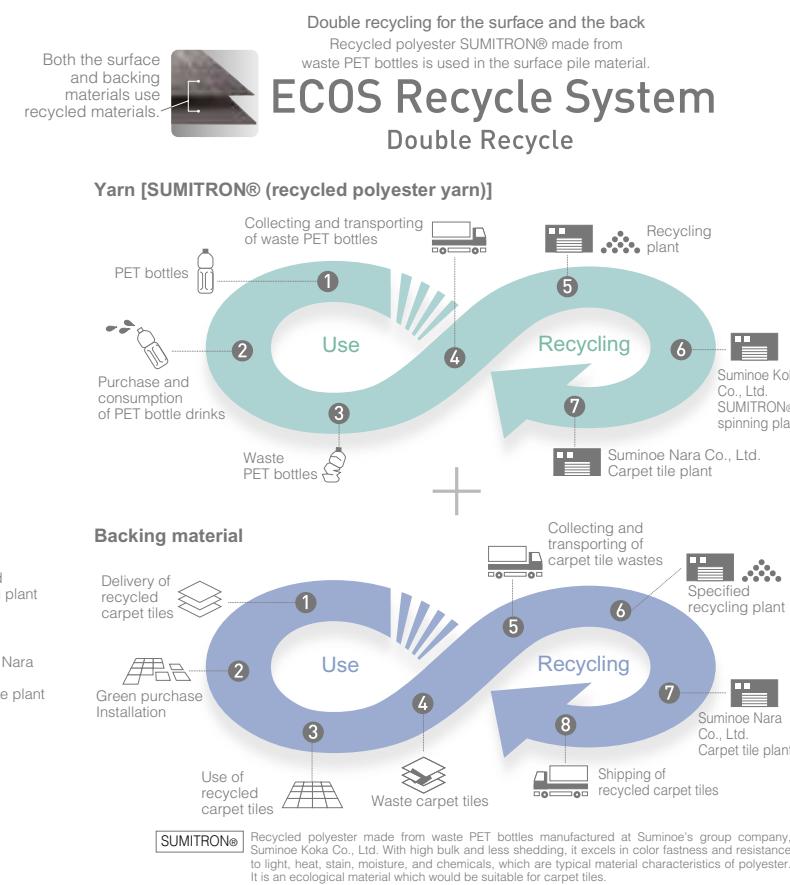
The product weight was also reduced by about 5 percent, resulting in lower transporting loads.

ECOS Recycle System

Renewing waste carpet tiles as resources.

Collecting waste carpet tiles from the market and recycling them as backing materials—that's the ECOS Recycle System. By renewing the production line, Suminoe has achieved the same cost performance level as virgin tiles while maintaining a high quality.

Producing backing materials from waste carpet tiles



Production stage | Resource-saving | Use stage | Lightweight

Fire-resistant honeycomb structure "SUMIHONEYCOMB"

The structure which is lightweight and has intensity was developed by kneading a Suminoe's special nano-size fire-resistant filler to the honeycomb structural body of the thermoplastic polymer.

Honeycomb structure

Intensity is not spoiled but required material can be reduced.
⇒Most outstanding structure



Space filling of polyhedral cells



It was developed for airplanes in the 1940s and succeeded in a cost cut and weight saving of the body.



Active part in frontier industries such as a space aeronautics machine

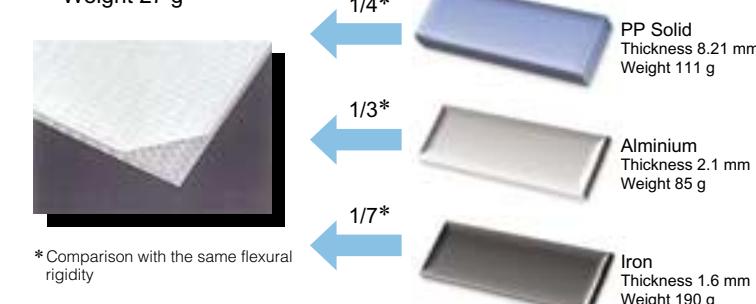


Material of attention again now



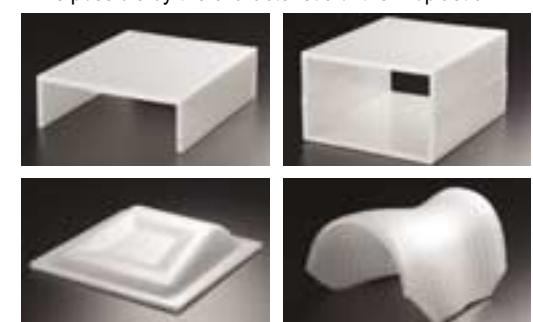
Weight saving (Compare with other material)

Polypropylene honeycomb
Thickness 12 mm
Weight 27 g



Second process of PP honeycomb structure body

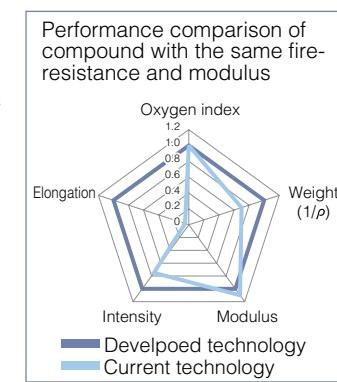
3-dimensional processing (Bending, Press, Welding) is possible by the characteristic of thermoplastic.



Suminoe's technology of flame retardant

Current technology
A lot of inorganic fire retardant in the PP polymer
⇒ Falling of dynamic characteristic or processability

Developed technology
Chemical fire-resistance mechanism and formation of the layer which intercept fire.
The small amount of nano-size fire-resistant filler.
⇒ Realization of fire-resistant material with safety and high performance.



Application of "SUMIHONEYCOMB"



Environmental-friendly technology

Use stage | Indoor environment improvement

Deodorizing treatment technology

► Triple-Fresh II

Triple fresh treatment, which absorbs and decomposes formaldehyde, cigarette smell and four major household odors, has been evolved.

- (1) Ability to absorb and decomposes pet odors is added.
- (2) Ability to kill formaldehyde has become two times stronger.

It not only absorbs odors simply, but chemically decomposes into harmless ingredients as water and CO₂ using oxygen in the air (24 h cycle odor-killing system). As a result, it will release odors very little. In this way, we can offer interior decoration products with excellent function.

It is used in carpets, curtain fabrics, wallcoverings, automobile interior fabrics, etc.



Fragrance & flavor analyzer

► Triple-Fresh Bio

Triple-Fresh Bio is developed based on new concept processing technology to make artificial enzyme support on a special corrugate.

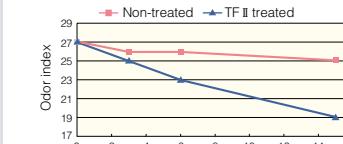
It quickly attracts bad odors by an absorbing function with a quick effect and decomposes bad odor continuously with the aid of catalysis of artificial enzyme. It can be used in home appliance products as refrigerator, air-conditioner or kitchen garbage processing machine, etc.

The removal period of the bad smell of aldehyde is much more longer by the improvement of filter base material and chemical absorption agent.

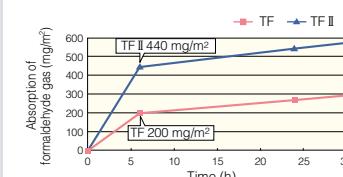
Application to air conditioner was attained by the fire-resistant performance.

Mechanism & performance

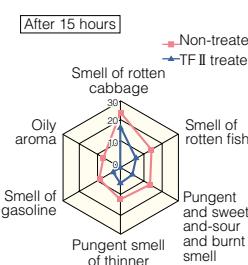
- ◆ Time course of odor index absorbing animal smell



- ◆ Comparison of deodorant power

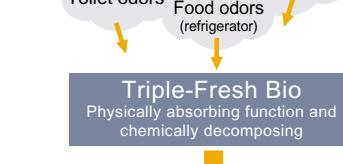


- ◆ Odor contribution rate of absorbing animal smell



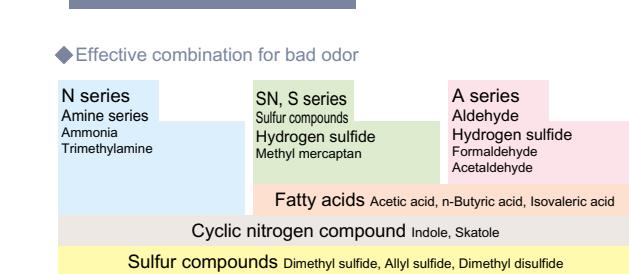
Mechanism & performance

- ◆ Household odors (shoes, pet, cigarette)
- ◆ Toilet odors
- ◆ Food odors (refrigerator)

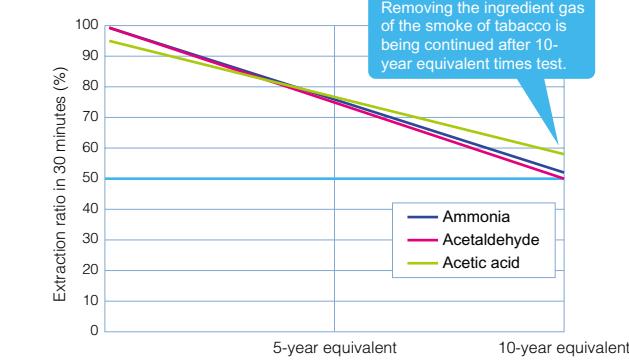


Functional group	Chemical absorbing → selectivity
Artificial enzyme	Reaction acceleration → durability
Activated carbon, zeolite	Physically absorbing → immediate effect +Antibacterial function

- ◆ Effective combination for bad odor



- ◆ Durable performance is realized as a deodorization filter for air cleaners for tobacco ten years.



Use stage | Indoor environment improvement

Cooling technology (cool eco treatment)

We have developed cooling technology as a value-added function to carpets for spring and summer seasons.

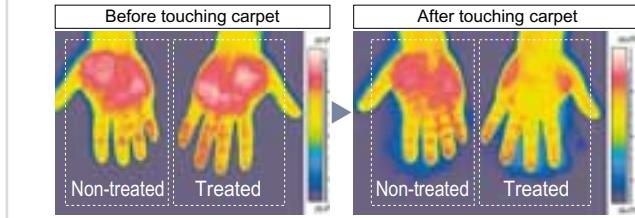
So far there are only carpets which make you feel fresh with its material or structure. But this product is after treated with special micro capsules, it quickly absorbs body heat and makes you feel cool and fresh when touched.

Two levels of cooling agents are used in this treatment, you can feel coolness in the range of 20°C to 28°C, with which we can expect reduction of cooler expense or reduction of energy.

Mechanism & performance

Since body temperature is absorbed when the substance enclosed in the microcapsule melt by body temperature, it is felt cool.

Surface temperature measured by thermograph



Warming technology (warm eco treatment)

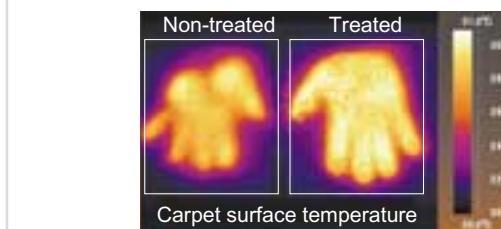
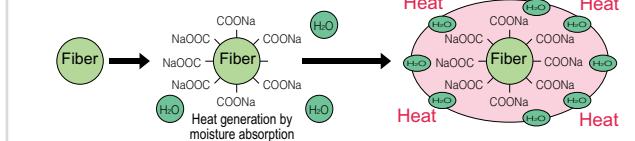
We have developed warming technology as a value-added function to carpets for autumn and winter seasons.

When a body touches a carpet in dry winter, the carpet absorbs moisture evaporating from a body and treated materials themselves generate heat.

This treatment can be applied to materials like polyester which never absorbs moisture. You can feel comfortable warmth and reduction of energy is expected. As summer is high humid environment, textile already absorbs moisture, it never generates heat.

Mechanism & performance

Low moisture content fiber with heat generation by moisture absorption



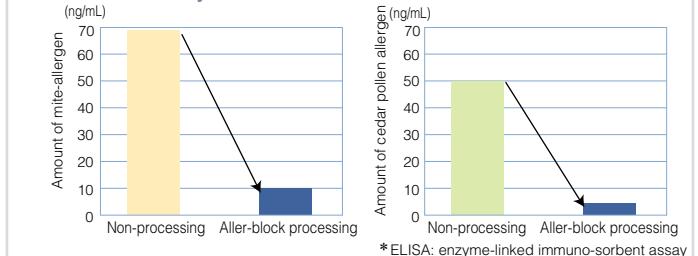
Anti-allergen processing technology (Aller-block)

"Aller-block" was developed to give a new function of anti-allergen to wall paper. "Allergen" means the allergy-causing substances such as pollens, droppings or dead bodies of mites.

Mechanism & performance

Cedar pollen allergen and Mite-allergen are suppressed by "Aller-block". "Aller-block" can suppress allergen activity by absorbing to the interlayer and has high durability even after high temperature treatment.

Assessment by ELISA*



Environmental-friendly technology

Use stage | Lightweight and pollution control

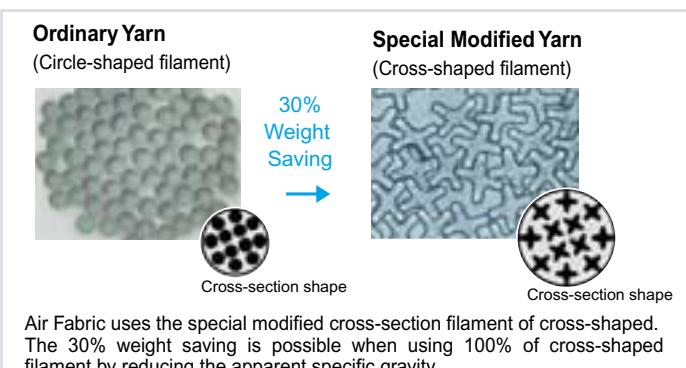
Air Fabric

- A unique modified cross-section fiber contributes to weight saving of the surface material of car seat.

By using the special modified cross-section fiber which is light and bulky, we have realized the 30% of weight saving of seat surface material to improve the fuel efficiency.

Merit

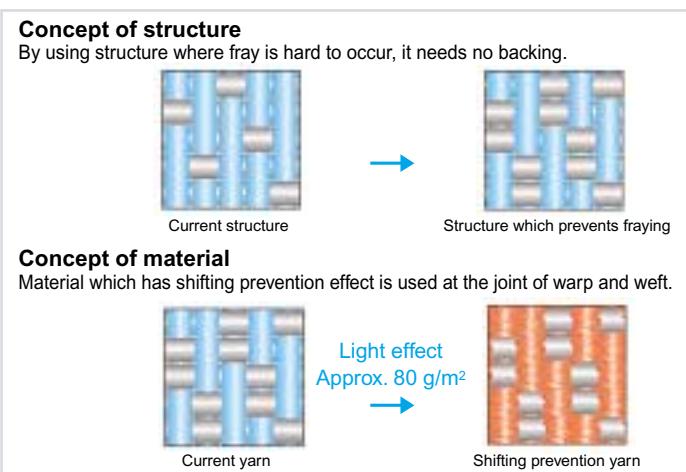
The bulkiness of the highly modified cross-section fiber makes the apparent thickness wider, and it makes the weight per unit less, saves the weight of whole product.



Back Coat Less Fabric

- Fabric with jacquard design which needs no backing

- By eliminating back resin, the fabric becomes lighter and inexpensive.
- It can cut out load on environment attached to backing resin.
- It improves drape performance.

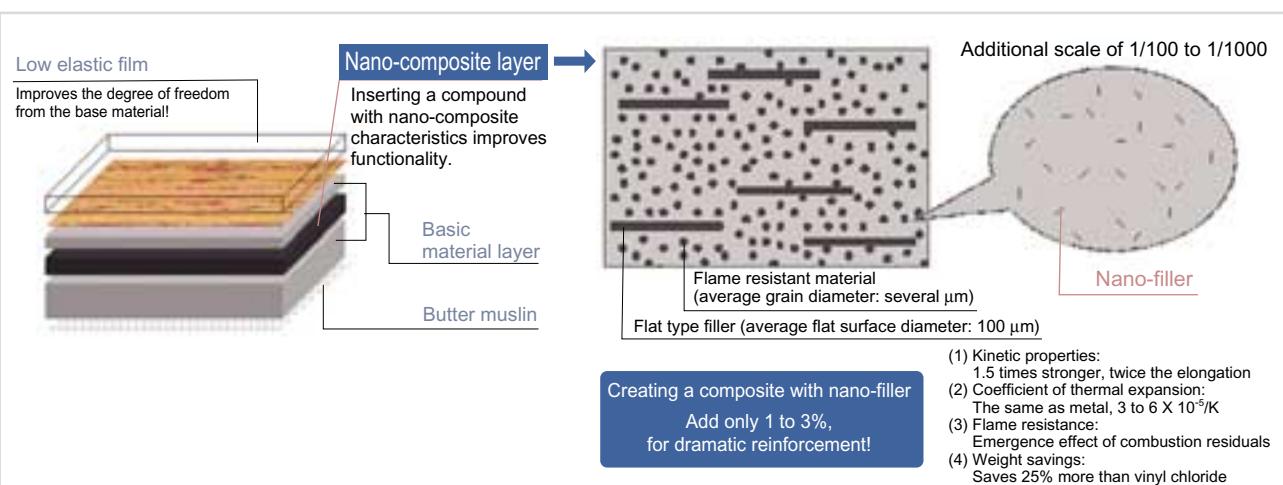


Nano-composite technology

- Highly effective using only a minute amount!

Ordinarily, when creating a highly flame resistant and abrasion resistant property to olefin resin floor material, either its weight per unit area or rigidity increases, making the floor material itself harder. This may cause dimensional instability caused by heat. To solve these technological problems, we've developed a technology that creates a compound layer by applying just a small amount of scattered specific nano-size filler.

By integrating this nano-composite layer in floor material, we've created a dramatic effect.



Use stage | Energy saving

▼▼ ECO 生活 ECO na seikatsu (ECO Life) curtain

- About 25%*1 of home energy is consumed by air-conditioners.

Openings (Windows) of the housing serve as lighting, sunshine, draft, ventilation and viewing. Energy-saving measures are also required for windows all year round to get comfortable indoor environment.

71% of heat inflow from outside come home from windows while cooling in summer daytime, and 48% of heat outflow to outdoor go out from the windows. Reduction of these heat flows is main measure of energy-saving. You can save energy cost by switching to thin curtain in summer to block heat inflow from outside and thick curtain in winter to block heat outflow to outside.

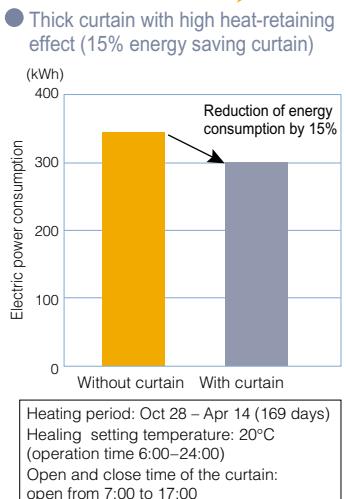
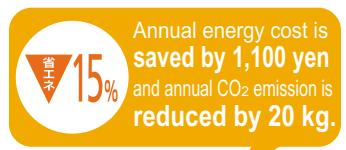
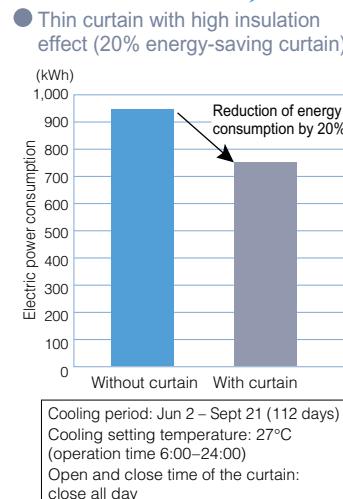
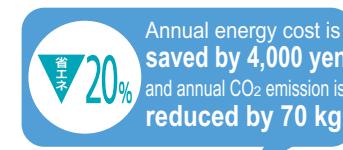
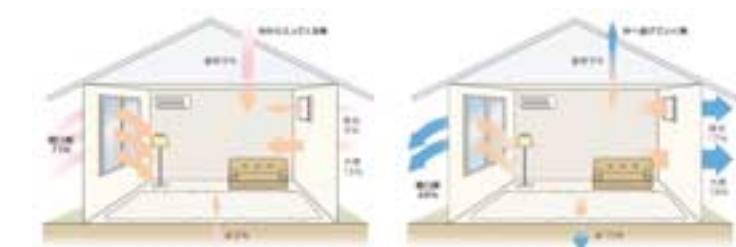
LESCOM-Suminoe simulation program can calculate energy-saving performances of Suminoe's all curtains. Please use it as a new standard for selecting curtain.

*1 Data source: Agency for Natural Resource and Energy FY2004 summary of electric power supply and demand

References

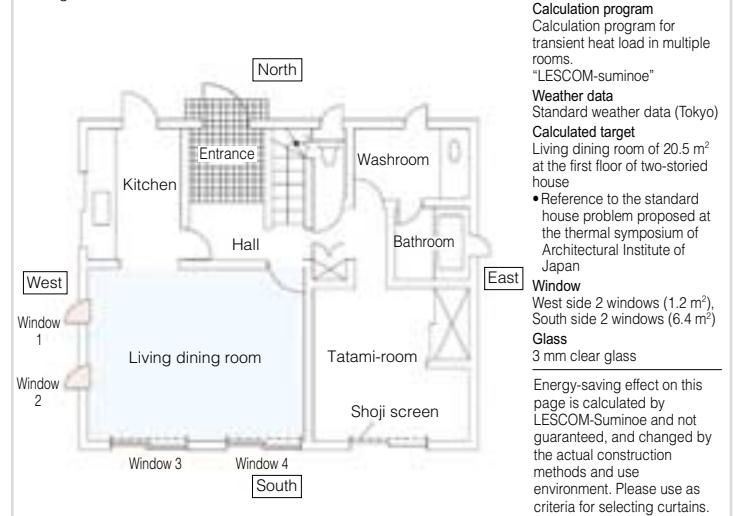
- Heating condition (period and temperature set point)
Energy-saving product catalog 2009 published by The Energy Conservation Center, Japan
- Heating electric power consumption
Calculated by transient heat load calculation program in multiple rooms "LESCOM-Suminoe" Coefficient of Performance COP = 2.5
- Electric power cost
22 yen/kWh FY2004 Home Electric Appliances Fair Trade Conference
- CO₂ emission (kg) = electric power consumption (kWh) × 0.373 (kg/kWh)

Ratio of heat inflow from windows while cooling in summer daytime is 71%. Ratio of heat outflow from the windows while heating in winter is 48%.



Simulation conditions

Confirm the difference of the air conditioner's electric power consumption, electric power cost and CO₂ emission between the living dining room with 4 curtains hung at the windows and the living dining room without curtains.



Environmental-friendly technology

Environmental-friendly products

● Interior decor business

Scrap stage | Pollution control

Processing technology of olefin floorcovering

With a purpose to reduce a load on environment, we are now developing processing technology for new-generation floorcoverings by adopting olefin resin in the floorcovering area where PVC is mainly used. We have developed "OH FILM S" which is easy to be installed and has an anti-slippery function to follow olefin tile "OH TILE" and olefin long sheet "OH SHEET ST." They are adopted in railway vehicle area and are expected as future products.

Following features are realized by technology development.

☆ Safety	It generates little toxic gas at incineration as the material is olefin.
☆ Anti-slippery	It is authorized as flame-retardant in flammability test for railway vehicle materials.
☆ Durability	It is used at the entrance of railway vehicles due to its anti-slippery function.
☆ Anti-pollution	It has an excellent wear durability.
☆ Easy installation	It is very hard to be polluted by pollutants as oil or chemicals.
☆ Design	It is easy to be installed in a short time as special adhesive is applied on back face.
☆ Design	As the mat itself is transparent, various designs are available by printing.

► Safety functions

◆ Comparison of combustion (ppm)

Item	Polyolefin flooring	PVC flooring
Carbon Dioxide (CO)	123	267
Hydrocyanic acid gas (HCN)	No detection	11
Hydrogen Chloride (HCl)	No detection	100
Hydrogen Fluoride (HF)	No detection	No detection
Sulfur Dioxide (SO ₂)	No detection	No detection

◆ Slip resistance tester



Slip resistance tester

The above chart shows the range of CSR* under various conditions with men's soft sole shoes.

* CSR stands for Coefficient of Slip Resistance, which is a coefficient to evaluate slippery and it evaluates safety against slippery in walking.

◆ Comparison of smoke generation (Ds)

Polyolefin flooring	PVC flooring
After 4 minutes 62	After 4 minutes 171
Maximum value 122	Maximum value 171

Scrap stage | Recycling technology & recycling system

SUMICUBE®

Polyester fiber elastic structural material as seat cushion for railway transportation

Used materials are collected and chemically recycled (polymer ⇒ depolymerization ⇒ monomer (purity: 99.99%) ⇒ polymerization ⇒ polymer) to be used as materials for clothes like shirt.

As this system is an in-house recycle system to reuse waste generated in the process, it is possible to make wastes nearly zero.

► Recycle flow of SUMICUBE® Seat Cushion Material



A list of products (for general houses, hotels, offices, hospitals and public institution)

Effect on environment	Product	Description	Usage			
			Carpet	Curtain	Hard flooring	Wall paper
Purification of indoor environment	Triple-Fresh® II	Absorb and decompose formaldehyde, etc. from indoor air	○	○		
	TF-V	Absorb and decompose formaldehyde, etc. from indoor air				
	Triple-Fresh® Plus	Triple-Fresh II plus personal care		○		○
	Low formaldehyde product	Low formaldehyde product approved by IFPEC (F☆☆☆☆)	○	○	○	○
	Aller-Block®	Suppression of mite-allergen and pollen-allergen activity by absorbing to the interlayer	○	○		○
	CLEANSE® antiviral activity process	Antiviral activity process for the textile product	○	○		○
	Sound insulation Sound-guard	Indoor and outdoor sound insulation	○	○		
	Sound absorption	Indoor sound absorption		○		
	Anti-mite treatment	Mite evasion product approved by IFPEC*	○			
Recycle	ECOS® recycle system	Collecting and recycling system of carpet tile wastes	○			
	Designated procurement goods by Law on Promoting Green Purchasing	Procurement of Eco-friendly Goods by the State and Other Entities	○	○	○	
	Products acquired Eco Mark	Eco Mark products for environmental protection	○	○		
	Production and use of Sumitron® (polyester) yarn	Recycled from PET bottle	○	○		
	Products made from natural fiber materials	Products with natural renewable materials	○	○		
	Curtain recycle system	Collect used curtain fabrics and use them in other usage		○		
	eAccess-floor "SE-Light N" series	Using reclaimed polypropylene beer case	○			
Energy-saving Resource-saving	NOKORI DYE®	Eco-friendly dyeing with the waste of food-processing process	○			
	CO ₂ emission reduction with Life-Cycle-Assesment	Evaluating the environmental impact from cradle to grave	○			
	Solution dyed yarn	Reduction of waste water and energy at dyeing process(the yarn needs no dyeing)	○	○		
	Warming technology (Warm Eco treatment)	Carpet absorbs moisture from a body and treated materials generate heat.	○			
	Cooling technology (Cool Eco treatment)	Special micro capsules absorb body heat quickly.	○			
	Energy-saving curtain "Eco na seikatsu (ECO Life)"	Energy-saving performance calculated by LESCOM-Suminoe system	○			

* IFPEC (Interior-fabrics Performance Evaluation Conference)



Resources to the future ECOS® Recycled carpet tile

ECOS has achieved the recycled material ratio of up to 77 percent*, far superior to Eco Mark Certification Criteria. The series has reduced a higher mount of CO₂ emission than Suminoe's exiting products by 40 percent or more in the LCA assessment.
* In the case of SG-300 and SG-400.

The strong points of "ECOS" are as follows,

(1) Recycled material ratio of up to 77 percent*, far superior to Eco Mark Certification Criteria. Controlling safety with selected raw materials for recycling.

(2) Maximum CO₂ emissions reduction rate of 43% in the LCA assessment of Mizuho Information & Research Institute, Inc.

(3) The same cost performance level as virgin tiles.

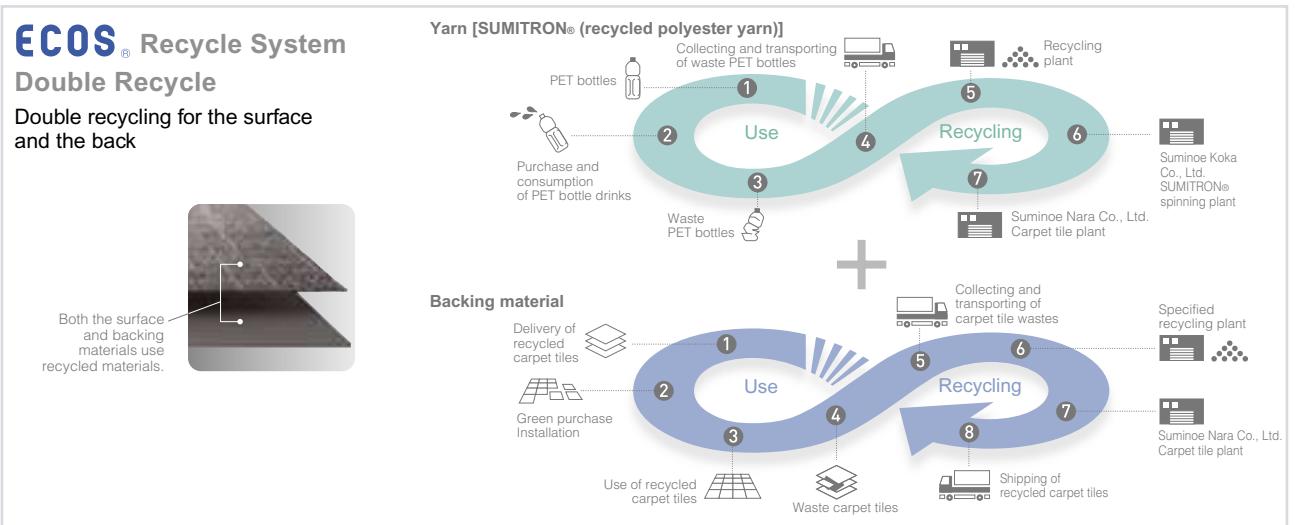
Collecting of carpet tile wastes ⇒ recycling materials ⇒ producing and selling of recycled carpet tiles ⇒ Usage ⇒ Collecting ... ECOS's concept is "Resources to the future" and makes ECO value chain.

SUMINOE started to produce ECOS series (10 marks, 168 items) from July 15, 2011 and will apply ECOS to all of its carpet tiles.

Following the key phrase "Resources for the future," we intend to play a leading role in helping establish a sustainable society as a pioneer interior maker.



iD-5302





Products acquired Eco Mark

299 items of Carpet, Curtain and eAccess-floor "SE-Light N" have acquired Eco Mark.

The Eco Mark program which the Japan Environment Association undertakes, is managed in accordance with the standard and principle (ISO 14020, ISO 14024), a type I environmental-label display.

The EcoMark is applied to the products with low environmental impacts and useful for environmental conservation through the whole life cycle as "from cradle to grave".

It depends on the product group such as the carpets and curtains about the recognition standard, and the reproduction material mixing rate standard is different respectively.

It is not a throw-away product, "It is displayed that it is easy to recycle", and "Severe standard to the poisonous substance", etc. are provided besides the reproduction material mixing standard.

Suminoe receives recognition in the field of the carpet tile, roll carpet, piece carpet, rug carpet and the curtains, and will increase in the future.

Products line up

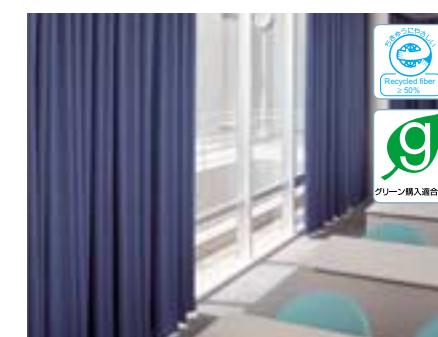
- Recycled Carpet Tile "ECOS"
- Curtain "modeS Curtain Vol. 5", "face Contract Curtain Vol. 7"
- Roll carpet "ECOLOA100", OA floor "SE-Light N"
- Rug carpet "SUMITRON® SAXSONY", "SUMITRON® TWISTY", "SUMITRON® BOTANICAL"

Curtain (25 items), Carpet tile for office (186 items), Roll carpet (12 items),

Rug & Piece carpet (70 items), eAccess-floor "SE-Light N" series (6 items)...Total 299 items as end of October 2011.



LX-1509



E-7381



ECR-101/ECR-104



SG-501/SG-503



Carpet for CO₂ emission reduction with Life-Cycle-Assessment

ECOLOA 100

reduces CO₂ emission by 30% than nylon solution dyed roll carpet.

It makes use of SUMITRON®, polyester yarn that contain 60% or more reclaimed materials from PET bottle.

ECOS SG500

reduces CO₂ emission by 43% than nylon dyed carpet tile

ECOS SG-500 is epoch-making carpet tile containing recycled material both in the surface pile SUMITRON® yarn (made from PET bottle) and recycled PVC backing (made from carpet tile wastes only).



ECO na seikatsu (ECO Life) curtain

Energy-saving performance calculated by LESCOM-Suminoe system

Curtain can save heating and cooling energy loss and monthly utilities. Suminoe indicates 4 classes of energy-saving performance for all curtain.

Please use as a new standard for selecting curtain.

● **Heating effect** for thick curtain,
Bigger value means higher energy-saving

▼15% ▼10% ▼5% ▼4% or less

● **Cooling effect** for thin curtain,
Bigger value means higher energy-saving

▼20% ▼15% ▼10% ▼9% or less

Energy-saving performance for curtain is calculated by LESCOM-Suminoe system.
"LESCOM-suminoe" is developed program for calculation of curtain energy-saving performance from LESCOM (Life Energy Saving Computer Method by Prof. Hitoshi Takeda, Tokyo University of Science).

Products line up

- Curtain "U Life Curtain Vol. 6", "modeS Curtain Vol. 5", "face Contract Curtain Vol. 7"



U-5300: Curtain sample of energy-saving 20%

▼20%



Triple-Fresh® II treatment curtain, carpet, wall paper

Triple-Fresh treatment chemically absorbs and decomposes formaldehyde—indoor contaminant—into safe substances. It also absorb and decomposes unpleasant odors coming from cigarette smoke, pet and major 4 bad life odors*.

It is a reliable and safe 24-hour cycle odor destroying treatment not only absorbs but decomposes unpleasant odors into safe components as water and carbon dioxide by using oxygen in air and never re-emits those odors into air.

* Ammonia, Hydrogen Sulfide, Methyl Mercaptane, Trimethylamine

Products line up

- Curtain "U Life Curtain Vol. 6", "modeS Curtain Vol. 5", "face Contract Curtain Vol. 7"
- Carpet tile "ECOS SG-300TF", Rug carpet "HOME®RUG Rugmat 2011–2012"
- Wall paper "Air Cleaning Wallcovering"

CRAFT LINE (Wall paper) Series received Good Design Award 2011.



R-4613



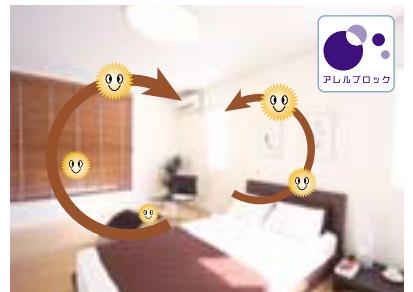
Aller-Block® Wall paper, Curtain, Carpet

"Aller-block" was developed to give a new function of anti-allergen to wall paper.

"Aller-block" can suppress allergen activity by absorbing to the multilayer structure made from inorganic materials form natural mineral and has high durability even after high temperature treatment.

Products line up

- Rug "SUMITRON® GLAIN", "SUMITRON® HARMONY", "NEOGLOSS", "SUMITRON® DUO", "LAX FUR", "GLASS WEB", "SHARON"
- Wall paper "Anti-allergen wall paper Aller-Block®"
- Curtain "U Life Curtain Vol. 6", "modeS Curtain Vol. 5", "face Contract Curtain Vol. 7"



R6009



CLEANSE® Antiviral activity treatment for the textile product Curtain, Carpet

Antiviral activity treatment "CLEANSE®" can decrease viral infectivity. Joint study of KURABO and Suminoe apply CLEANSE® to curtain and carpet. This antiviral Agent is made from oral antiseptic and testified high safety. CLEANSE® product is expected to be widely used not only Medical but school sport cloth and others.

Products line up

- Rug carpet "HOME® Big Size Rug Vol. 5", "HOME® Piece Carpet Vol. 1"
- Curtain "U Life Curtain Vol. 6", "face Contract Curtain Vol. 7"



"GLASS WEB" GW-1

A list of products (for automobile, railway, bus and ship)

Category	Products	Description	Usage	
			Automobile	Railway etc.
Indoor environment improvement	Triple-Fresh® treatment	Formaldehyde and cigarette smoke and major 4 bad life odors in a car are absorbed and decomposed.	○	○
	Face fabric for car seat (low formaldehyde)	Backing material with low formaldehyde is used.	○	○
	Car seat fabrics with skin care treatment Ato-Guard®	Textile fabrics with "chitosan" and "collagen"	○	
Recycle	Car seat fabrics with anti-allergen treatment	Suppression of mite-allergen and pollen-allergen activity by absorbing to the innerlayer.	○	
	Seat cushion material for railway vehicles SUMICUBE®	Recyclable polyester fiber elastic structural material	○	
Pollution control	PVC-free car mat	Polyolefin backing material is used.	○	
	PVC-free car accessories	Polyester yarn and polyolefin backing material are used.	○	
	PVC-free flooring in a transit vehicle	Polyolefin resin is used.		○
Energy-saving Resource-saving	Eco-fabric	More than 50% reclaimed recycled yarn is used.		○
	Air Fabric	Lightness performance through unique yarn cross section	○	
	Back Coat Less Fabric	Fabric with jacquard design with no back coat	○	
	Swing-net® car seat	Three dimensional knit fabric with Sumitron yarn (lightweight)	○	
	Sound absorbing carpet and mat for cars	Non-woven backing material used (lightweight)	○	

Eco-fabric with Eco Mark*

Fabric corresponding to "Green Purchasing"

We offer "Eco-fabric" with Eco Mark using recycled yarn as seat fabrics of railway vehicles or buses. (Certified No. 03105015)

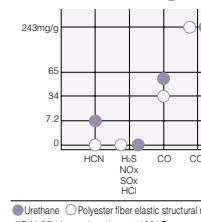
In recent years, sales quantity is increasing with a rise of the purchase consciousness of eco-friendly products.

* Eco-fabric with Eco Mark: Recycled yarns are used 50% or more.



Eco-fabric: Keihin Kyuko Bus Haneda Airport KEIKYU LIMOUSINE

Comparison of combustion gas



SUMICUBE®: JR SANYO KYUSHU SHINKANSEN "MIZUHO" and "SAKURA"

Seat cushion material for railway vehicles

SUMICUBE®

This is the seat cushion material for railway vehicles which are treated special processing of the polyester fiber elastic structural material. Recycling is possible after being used as a sheet for a long time. Our company has established the recycling system which collects used materials and is reused.

Moreover, as compared with the urethane currently generally used as cushion material of a seat, it generates less poisonous gas like cyanogen gas at the fire outbreak, it is a safe material.

It is adopted as JR SANYO KYUSHU SHINKANSEN "MIZUHO" and "SAKURA" as cushion material of a back reclining portion.

Polyolefin Anti-slip floor film

OH Film S7P (for railway vehicle)

It has been adopted as entrance anti-slip material for railway vehicle required high level of safety.

- Environment: Less poisonous gas such as HCN and HCl
- Safety: High anti-slip and durability under the wet and dry condition.
- Gentleness: Display by print "NOTICE", "GUIDANCE", "ATTENTION", etc.



OH Film S7P: Mobile phone power off area
Transportation Bureau, City of Yokohama

OH Film B (for Bus)

It has been adopted as a warning film for accident prevention in the bus.

Using aluminum base layer, It can be easily glued not only to the flat floor but rough floor.



OH Film B: HANKYU BUS

Lightweight Seat fabric

Worrying about depletion of oil resource, we pursue "Lightness performance" of car seat fabric for the improvement in fuel consumption of a car.

Air Fabric

By utilizing yarn with high modified cross section, yarn becomes bulkier and the thickness by appearance is improved.



Air Fabric: SUZUKI JIMNY



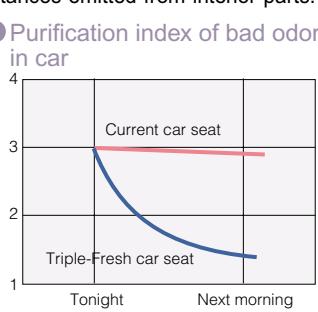
Back Coat Less Fabric: SUZUKI SWIFT

Headliner & seat fabric with odor destroying function

Triple-Fresh® treatment

Bad odor from pets or cigarette in a car is absorbed and decomposed by applying Triple-Fresh® treatment on headlining or seat fabrics. You will hardly notice these odor in your car on the next day. It also reduces chemical substances emitted from interior parts.

Suminoe could realize an interior space with safety materials for you and your family. Triple-Fresh treatment is a new eco-friendly technology to absorb and decompose odor from formaldehyde, cigarette, major 4 bad life odors. Suminoe has developed this technology firstly in the industry.



Deodorizing headliner: MAZDA PREMACY

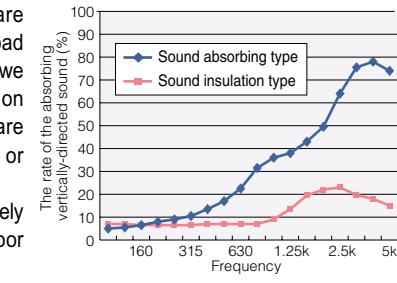
Sound absorption carpet and mat for cars

We have developed a floor carpet to improve the silence of a car room as well as to save the weight of a car.

The current method of increasing insulation property is to make the resin layer on the back of a carpet heavier. In order to realize a weight saving and insulation on the back of a carpet heavier. In order to realize a weight saving and insulation improvement at the same time, a resin layer of a sound absorption carpet is replaced with the felt of low specific gravity.

By using this technology, high sound absorption and attenuation function are attained. In addition, a road noise is also absorbed and we can expect a big effect on reducing noises which are coming through ceiling or windows.

This technology is diversely used in option mats, floor carpets, etc.



Floor carpet



Option mat

A list of products (for design seeking media, interior, industrial equipment, material for environmental conservation)

Category	Products	Description	Usage
Indoor environment improvement	Air freshener Tispa series	Consumer product used in homes that mitigate unpleasant odors	Home appliance
	Triple-Fresh Bio	Odor destroying filter for refrigerator, air conditioner, ventilating fan	Home appliance
	SUMITRON® AM	Antibacterial, antimold PET fiber for bath rugs or cleaning utensils	Interior etc.
	Self - fresh	Auto-reclaiming filter for air purifier in the buildings, subway, factories	Industrial equipment
Pollution control	OH TILE/Polyolefin for transit vehicle	Polyolefin hard flooring	Interior
	Total water shield system	Special water shield system in final waste disposal site	Construction
	SUMITRON® yarn (PET filament)	No toxic gas like chlorine gas or cyan gas at incineration	Interior
Energy-saving Resource-saving	Breathable heat shield roofing sheet	Roofing sheet with breathable 5 layers structure	Construction
	True Art system	Jet print special pigment ink on film or fabrics	Media
	Nassenger	Ink-jet print special dye stuff on fabrics	Media
	3-D knit fabric (Swing Net Fabric)	Non-require cushion material	Industrial materials



Air freshener Tispa series (Tune to Infinite Special Air)

Air freshener "Tispa (Tune to infinite special air)" is a series of consumer products which mitigate unpleasant odors in home. Tispa has had 3 types for refrigerators, lavatories and shoe cabinets. And we have launched new one for shoes which take unpleasant odors inside of the shoe off.



Tispa



Air-filter product group

"Triple-Fresh® Bio" is a new concept of deodorizing filter that biomimetic enzyme is invested in corrugate carrier. It continuously deodorizes unpleasant odor gas. Biomimetic enzyme works as catalyst, and decomposes and deodorizes unpleasant odor components by oxidation-reduction reaction. Therefore its validity is semi-permanent.



Triple-Fresh® Bio filter

Antibacterial and antimold SUMITRON® AM yarn

SUMITRON® AM yarn

Antibacterial, bacteriostatic, odor-resistant and antimold functions are added to SUMITRON® yarn used as carpet pile yarn.

It has an effect which suppress dermatophyte at the time of water use. It has a bacteriostatic function in medical spot and it can maintain clean environment. SUMITRON® AM has aquired SEK (Green, Red, Orange, Blue) Mark of JTETC (Japan Textile Evaluation Technology Council).



Bath Mat

Polyolefin Flooring products

OH TILE® and OH Sheet S

Flooring made from polyolefin resin emits little smoke and no toxic gas when it burns. Compared with polyvinyl chloride flooring, our new polyolefin flooring has excellent durability, chemical resistance and easy-maintenance property that keep floorings beautiful. This flooring is used for railway vehicles and elevators required high level of safety.



OH Sheet S
JR-EAST 485



OH TILE® Toshiba Elevator



Special water shield system at disposal site

Total water shield system

Sheet used in the slope and base of waste disposal site is provided with the role to prevent water from the waste penetrating into soil. Special-treated water shield sheet "Barias" bears this important role in our total water shield system. As polyester non-woven fabric made from PET bottles is used in the protective sheet, this system is "Eco products" which positively tackles with protection of environment.



Protective sheet at disposal site (Kiyosato, Hokkaido)



Breathable heat shield roofing sheet

Asphalt roofing sheet is commonly used for waterproof of roof, but Suminoe produces new type of roofing sheet. It is lighter weight than asphalt roofing and reflect radiant heat from roof tiles warmed by sunlight. It can control indoor temperature rise and save the air control energy. Moreover the house durability is made stronger by breathable water-proof function.



Breathable heat shield roofing sheet under roof tile



Ink-jet printing system

True art/Nassenger

"True art" is digital print system using special pigment ink that applies for wall coverings and floor coverings. "Nassenger" is ink-jet dyeing system that prints digital design on fabric. These systems can produce energy-saving and resource-saving goods that reduce waste water during printing process. And they can produce various products with small lot and full color. We, Suminoe, apply these systems to apparel, interior goods, seat fabric of various vehicles.



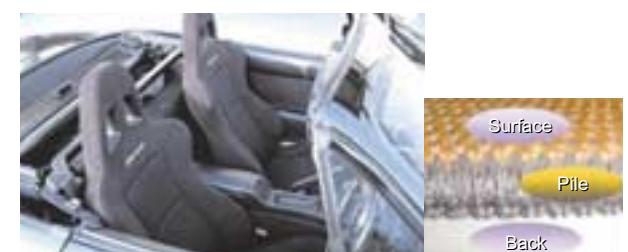
JR KYUSHU EXPRESS: ASOBOY



3 dimensional knit fabric

Swing-Net® fabric

Applying current warp knitting technology, we have developed the most suitable materials and knit construction with an aim to create products which provides cushion capacity. As mono-filament yarn (gut) is used as a yarn which connects knit construction of both surfaces, fabric itself is able to have cushion capacity. So this is a resource-saving product which does not require cushion material when used as upholstery. Besides cushion material, this is widely used as a car seat material, functional bed, desk partition featuring its comfortness or lightweight.



Car seat (Swing Net Fabric)



Structure of cross section